**IN THE CLAIMS:**

Please amend the claims, as follows:

Claim 1 (currently amended): An automated method for optimizing liquid-handling parameters for liquid-handling instruments comprising the steps of:

identifying a plurality of factors that determine a pipetting precision of a liquid class for a liquid under test; and

performing an optimization experiment to optimize the levels of identified factors determining the pipetting precision[[.]] ;

wherein the step of identifying the plurality of factors determining precision includes the steps of:

automatically generating a screening experimental design based on user-selected parameters and levels to determine a plurality of factors that can be eliminated from any additional evaluation.

Claim 2 (original): The automated method for optimizing liquid-handling parameters of claim 1 further comprising the step of generating a range-finding experiment to determine a volume range for the optimized pipetting parameters of the liquid class.

Claim 3 (original): The automated method for optimizing liquid-handling parameters of claim 1 further comprising the steps of generating an accuracy calibration coefficient for the liquid class under test and verifying and evaluating the precision and accuracy of the liquid class under test.

Claim 4 (currently amended): The automated method for optimizing liquid-

handling parameters of claim 1 wherein the liquid class includes a plurality of parameters for [[a]] the pipetting control processing logic to define pipetting of a specific liquid.

Claim 5 (original): The automated method for optimizing liquid-handling parameters of claim 1 wherein the precision of a liquid class is a measure of a variance among a plurality of pipetting replications with a given liquid, volume, and set of parameters.

Claim 6 (original): The automated method for optimizing liquid-handling parameters of claim 3 wherein the accuracy of a liquid class under test is a measure of a variance between an amount of liquid that the liquid-handling instrument is instructed to pipette and a volume of liquid that is actually pipetted.

Claim 7 (original): The automated method for optimizing liquid-handling parameters of claim 2 further comprising the steps of generating an accuracy calibration coefficient for the liquid class under test and verifying and evaluating the precision and accuracy of the liquid class under test.

Claim 8 (currently amended): The automated method for optimizing liquid-handling parameters of claim 1 wherein the step of identifying the plurality of factors determining precision includes the steps of:

~~automatically generating a screening experimental design based on user-selected parameters and levels to determine the plurality of factors that can be eliminated from any additional evaluation;~~

creating a set of liquid classes based on the screening experiment design;

directing a pipetting control processing logic to execute a plurality of pipetting commands corresponding to the liquid classes; and

performing an effects analysis to determine the plurality of factors determining pipetting precision.

Claim 9 (currently amended): The automated method for optimizing liquid-handling parameters of claim 1 wherein the step of optimizing the levels of identified factors determining pipetting precision includes the steps of:

automatically generating a response surface experimental design based on the identified factors;

creating a set of liquid classes based on the response surface experimental design;

directing [[a]] <u>the</u> pipetting control processing logic to execute a plurality of pipetting commands corresponding to the set of liquid classes; and

performing a response surface methodology analysis to determine the optimized level of factors determining precision.

Claim 10 (original): The automated method for optimizing liquid-handling parameters of claim 9 wherein the step of performing a response surface methodology analysis includes calculating a coefficent of variation for each pipetting condition in a response surface methodology experiment and analyzing the coefficent of variation for each pipetting condition to estimate an optimal level for each factor.

Claim 11 (original): The automated method for optimizing liquid-handling

parameters of claim 1 further comprising the step of determining a calibration coefficient and an adjustment volume for the liquid class under test.

Claim 12 (original): The automated method for optimizing liquid-handling parameters of claim 3 wherein the step of verifying and evaluating the precision and accuracy of the liquid class under test comprises the steps of:

evaluating all volume ranges specified for a liquid class in a single automated run;

generating the set of final liquid class parameters; and

tabulating and graphically presenting the precision and accuracy at all measured data points.

Claim 13 (original): The automated method for optimizing liquid-handling parameters of claim 2 wherein the step of generating a range-finding experiment comprises determining the volume range meeting pre-specified precision requirements for the liquid class under test.

Claim 14 (currently amended): A system for ~~optimizing parameters for liquid-handling~~ practicing the method of claim 1, comprising:

a liquid-handling instrument that delivers a specified volume of a liquid;

a pipetting control processing logic operating on a processor device that directs the actions of the liquid-handling instrument; and

a liquid-handling parameters optimization processing logic operating on the processor device, and cooperative with the pipetting control processing logic that automatically optimizes liquid-handling parameters.

Claim 15 (currently amended): The system ~~for optimizing parameters for liquid-handling~~ of claim 14, wherein the liquid handling parameters optimization processing logic comprises:

a screening design module that identifies a plurality of factors affecting the pipetting precision of a liquid class;

a data evaluation module that generates a list of factors affecting precision;

a response surface design module that collects data for use in optimizing the levels of factors affecting pipetting precision; and

a response surface evaluation module that determines an optimal level for each factor based on a computed standard error for each pipetting condition used in a test.

Claim 16 (currently amended): The system ~~for optimizing parameters for liquid-handling~~ of claim 14, wherein the liquid handling parameters optimization processing logic further comprises:

a range-finding design module that collects data for use in determining a plurality of limits of precise pipetting for a liquid class optimized at a particular volume; and

a range-finding evaluation module that determines a plurality of volume limits of a liquid class based on user-defined criteria.

Claim 17 (currently amended): The system ~~for optimizing parameters for liquid-handling~~ of claim 14, wherein the liquid handling parameters optimization processing logic further comprises:

an accuracy calibration module that generates data for determining a calibration

coefficient for a liquid class; and

a calibration coefficient module that generates the calibration coefficient and an offset volume for the liquid class and selected volume ranges.

Claim 18 (currently amended): The system ~~for optimizing parameters for liquid-handling~~ of claim 14, wherein the liquid handling parameters optimization processing logic further comprises:

a liquid class verification module that generates data for determining the precision and accuracy of a liquid class; and

a liquid class evaluation module that tabulates and presents the precision and accuracy of the liquid class.

Claim 19 (currently amended): The system ~~for optimizing parameters for liquid-handling~~ of claim 16 wherein the liquid handling parameters optimization processing logic further comprises:

an accuracy calibration module that generates data for determining a calibration coefficient for a liquid class;

a calibration coefficient module that generates the calibration coefficient and an offset volume for the liquid class and selected volume ranges;

a liquid class verification module that generates data for determining the precision and accuracy of a liquid class; and

a liquid class evaluation module that tabulates and presents the precision and accuracy of the liquid class.

Claim 20 (currently amended): A computer readable medium containing a computer program product for optimizing liquid-handling parameters for liquid-handling instruments, the computer program product comprising:

program instructions that identify a plurality of factors that determine a pipetting precision of a liquid class for a liquid under test; and

program instructions that perform an optimization experiment to optimize the levels of identified factors determining the pipetting precision [[.]]

wherein the program instructions that identify the plurality of factors determining precision comprise:

program instructions that automatically generate a screening experimental design based on user-selected parameters and levels to determine the plurality of factors that can be eliminated from any additional evaluation.

Claim 21 (original): The computer program product for optimizing liquid-handling parameters of claim 20 further comprising program instructions that generate a range-finding experiment to determine a volume range for the optimized pipetting parameters of the liquid class.

Claim 22 (original): The computer program product for optimizing liquid-handling parameters of claim 20 further comprising program instructions that generate an accuracy calibration coefficient for the liquid class under test and verify and evaluate the precision and accuracy of the liquid class under test.

Claim 23 (original): The computer program product for optimizing liquid-handling

parameters of claim 20 wherein the liquid class includes a plurality of parameters for a pipetting control processing logic to define pipetting of a specific liquid.

Claim 24 (original): The computer program product for optimizing liquid-handling parameters of claim 20 wherein the precision of a liquid class is a measure of a variance among a plurality of pipetting replications with a given liquid, volume, and set of parameters.

Claim 25 (original): The computer program product for optimizing liquid-handling parameters of claim 22 wherein the accuracy of a liquid class under test is a measure of a variance between an amount of liquid that the liquid-handling instrument is instructed to pipette and a volume of liquid that is actually pipetted.

Claim 26 (original): The computer program product for optimizing liquid-handling parameters of claim 21 further comprising program instructions that generate an accuracy calibration coefficient for the liquid class under test and verify and evaluate the precision and accuracy of the liquid class under test.

Claim 27 (currently amended): The computer program product for optimizing liquid-handling parameters of claim 20 wherein the program instructions that identify the plurality of factors determining precision comprise:

~~program instructions that automatically generate a screening experimental design based on user-selected parameters and levels to determine the plurality of factors that can be eliminated from any additional evaluation;~~

program instructions that create a set of liquid classes based on the screening experiment design;

program instructions that direct a pipetting control processing logic to execute a plurality of pipetting commands corresponding to the liquid classes; and

program instructions that perform an effects analysis to determine the plurality of factors determining pipetting precision.

Claim 28 (original): The computer program product for optimizing liquid-handling parameters of claim 20 wherein the program instructions that optimize the levels of identified factors determining pipetting precision comprise:

program instructions that automatically generate a response surface experimental design based on the identified factors;

program instructions that create a set of liquid classes based on the response surface experimental design;

program instructions that direct a pipetting control processing logic to execute a plurality of pipetting commands corresponding to the set of liquid classes; and

program instructions that perform a response surface methodology analysis to determine the optimized level of factors determining precision.

Claim 29 (currently amended): The computer program product for optimizing liquid-handling parameters of claim 28 wherein the program instructions that perform a response surface methodology analysis include program instructions that calculate a [[coefficent]] coefficient of variation for each pipetting condition in a response surface methodology experiment and analyze the [[coefficent]] coefficient of variation for each

pipetting condition to estimate an optimal level for each factor.

Claim 30 (original): The computer program products for optimizing liquid-handling parameters of claim 20 further comprising program instructions that determine a calibration coefficient and an adjustment volume for the liquid class under test.

Claim 31 (original): The computer program product for optimizing liquid-handling parameters of claim 22 wherein the program instructions that verify and evaluate the precision and accuracy of the liquid class under test comprise:

program instructions that evaluate all volume ranges specified for a liquid class in a single automated run;

program instructions that generate the set of final liquid class parameters; and

program instructions that tabulate and graphically present the precision and accuracy at all measured data points.

Claim 32 (original): The computer program product for optimizing liquid-handling parameters of claim 21 wherein the program instructions that generate a range-finding experiment comprise program instructions that determine the volume range meeting pre-specified precision requirements for the liquid class under test.